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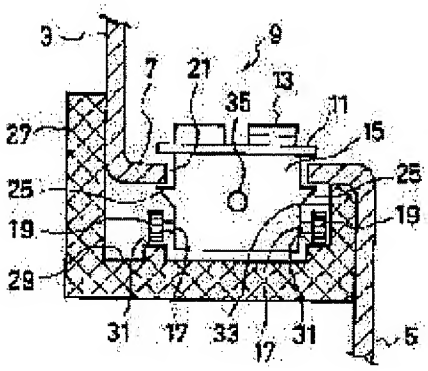
(54) SLIDE-TYPE DOOR SWITCH MODULE

(57)Abstract:

PROBLEM TO BE SOLVED: To suitably adjust the position of an operating plate by making an opening in which the casing of the operating plate can be slid in the back-and-forth directions in a door trim and fixing a base plate to the back side of the door trim and moving the easing in the back-and-forth directions by a driving means mounted on the casing and the base plate.



SOLUTION: An operating plate 11 is exposed on the top surface 7 of an arm rest 5 of a door trim 3 and a casing 15 is disposed thereunder. Both ends of a driving shaft 17 are projected from both sides of the easing 15 and a pinion gear 19 is fixed thereto. An opening 21 into which the casing 15 is inserted is made and the dimension of the opening in the back-and-forth directions is larger than that of the casing 15 such that it can slide in the back and-forth directions. The pinion gear 19 is engaged with a rack fixed on a base plate 27 mounted on the back side of the door trim 3 and is driven by a driving motor in the easing 15, whereby the easing 15 is moved in the opening 21 in the back-and-forth directions.

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1]A sliding type door-switch module comprising:
A door trim provided in a cabin inner side of a door for vehicles.
An operating plate part exposed to this door trim.
A casing provided in the lower part of this operating plate part.
An opening in which it was formed in said door trim, and a size of a cross direction was formed more greatly than a size of a cross direction of this casing so that a slide to a vehicles cross direction of this casing might be attained, A driving means which is continued and provided in a base plate which counters the back side of said door trim with said opening, and is allocated in it, and said casing and this base plate, and moves said casing to a cross direction of said opening.

[Claim 2]The sliding type door-switch module comprising according to claim 1:
A pinion gear by which said driving means was fixed to an end of a driving shaft projected from both side surfaces of said casing.
A rack of a couple which is provided in said base plate and gears with this pinion gear.

[Claim 3]The sliding type door-switch module according to claim 1, wherein said operating plate part is formed in a size which can cover said opening when said casing is moved to any of the front end of an opening, or the back end.
[Claim 4]A claw part is protruded on both side surfaces of said casing, The sliding type door-switch module according to claim 1 having regulated an omission from an opening of said casing by pinching said verge-of-opening part in this claw part and said operating plate part, and enabling a slide of said casing at a cross direction of said opening.
[Claim 5]The sliding type door-switch module according to claim 2 having provided a standing wall prolonged in the move direction of a casing in said base plate, and making the side of said pinion gear contact this standing wall.
[Claim 6]A position of an operating plate part is calculated as a specific position corresponding to arbitrary seats based on ergonomics, A control system of a sliding type door-switch module moving

said operating plate part to said specific position calculated based on a position of this seat after a seat is set as arbitrary positions.

[Claim 7]Two or more position information on an operating plate part corresponding to each of two or more drivers is memorized as an electrical signal to memory storage, A control system of a sliding type door-switch module reading said position information corresponding to this recognition signal inputted by inputting a specific recognition signal, and moving said operating plate part to a position corresponding to this position information by which reading appearance was carried out.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention is especially used for the door of a vehicle driver's seat about the sliding type door-switch module used for the door of vehicles, and is preferred.
[0002]
[Description of the Prior Art]According to a driver's bodily shape, back and forth movement of the driver's seat of vehicles is carried out, and it can be adjusted so that the optimal driving position can be set up. The front and back position of a driver's seat is set up in the position in which a driver can operate a brake pedal and an accelerator pedal the optimal fundamentally. Therefore, the position of a steering, a mirror, etc. will be adjusted to the driver's seat.
[0003]What is called a power seat for vehicles that made the driver's seat automatic and movable is proposed nowadays by constituting a driver's seat from drive mechanism movable, and operating the control switch formed near the driver's seat. In the power seat for vehicles, a control switch moves with a seat, even if it faces movement of a seat, the distance of a driver and a control switch is always kept constant, and good operativity can be secured now. In the vehicles which adopted the power seat for vehicles, when a seat moves, make it correspond to the setting-out position of a seat, a steering, a mirror, etc. are made to move, and what can carry out adjustment control of the ideal driving position automatically is proposed.
[0004]
[Problem(s) to be Solved by the Invention]However, in the adjustment control of the driving position developed by the present vehicles, although the seat, the steering, the mirror, etc. had been the target of automatic control, they were still fixed positions about the door switch. For this reason, even if adjustment of a driving position is made, the distance between door switches will not be adjusted, but it will be forced operation of a door switch with a stiff posture for some drivers, and there is a possibility of interfering with the operation itself. In the case where a door switch is a driver who becomes back, a look must be moved to the door side for an operation switch, and there is a possibility of interfering also with a safety aspect. While it was made in view of the

above-mentioned situation and movement becomes movable to the optimal position according to a driver's driving position, this invention, The sliding type door-switch module whose movement it is automatic in the position which was suitable for the driver with adjustment of the driving position, and is attained is provided, and it aims at aiming at improvement in operativity of a door switch, and improvement in safety at the time of operation.

[0005]

[Means for Solving the Problem]This invention is characterized by composition of a sliding type door-switch module comprising the following to achieve the above objects.

A door trim provided in a cabin inner side of a door for vehicles.

An operating plate part exposed to this door trim.

A casing provided in the lower part of this operating plate part.

An opening in which it was formed in said door trim, and a size of a cross direction was formed more greatly than a size of a cross direction of this casing so that a slide to a vehicles cross direction of this casing might be attained, A driving means which is continued and provided in a base plate which counters the back side of said door trim with said opening, and is allocated in it, and said casing and this base plate, and moves said casing to a cross direction of said opening.

A control system of a sliding type door-switch module concerning this invention, After calculating a position of an operating plate part as a specific position corresponding to arbitrary seats based on ergonomics and setting a seat as arbitrary positions, said operating plate part is moved to said specific position calculated based on a position of this seat. A control system of a sliding type door-switch module, Two or more position information on an operating plate part corresponding to each of two or more drivers is memorized as an electrical signal to memory storage, Said position information corresponding to this recognition signal inputted by inputting a specific recognition signal may be read, and said operating plate part may be moved to a position corresponding to this position information by which reading appearance was carried out. And in a sliding type door-switch module constituted in this way. Even if it is a case where a seat is moved with adjustment of a driving position, while an operating plate part becomes movable in optimal position to a driver and an operation switch in a stiff posture is lost, it becomes unnecessary to divert a look to the door side greatly for an operation switch. In a control system of a sliding type door-switch module. While an operating plate part is moved to optimal position doubled with a bodily shape and a posture of a driver calculated ergonomically and operation becomes possible also in operation with an impossible posture which is not, it dresses up for every driver, and setting out of a fine peculiar driving position is attained, and the reproducibility is also secured.

[0006]

[Embodiment of the Invention]Hereafter, the suitable embodiment of the sliding type door-switch module concerning this invention is described in detail with reference to drawings. The exploded perspective view of the sliding type door-switch module which showed the perspective view and drawing 2 in which the appearance of the sliding type door-switch module according [drawing 1] to this invention is shown in the A-A view figure of drawing 1, and showed drawing 1 drawing 3, and drawing 4 are the exploded perspective views explaining attachment of the sliding type door-

switch module shown in drawing 1. The door trim 3 which is an inner package board is attached to the cabin inner side of the door 1 for vehicles. The arm rest part 5 projected to the cabin inner side is formed in the door trim 3, and the upper surface 7 of the arm rest part 5 is flat, for example, is formed in the level surface.

[0007]Besides, the operating plate part 11 of the sliding type door-switch module (henceforth "SW module") 9 is exposed to the field 7. The switch of others for controlling the slide switch 13 for making the SW module 9 move and electronic autoparts is formed in the operating plate part 11.The casing 15 is formed in the lower part of the operating plate part 11. The both ends of the one driving shaft 17 are projected by the both side surfaces (field parallel to the internal and external surfaces of the door 1) of the casing 15, and the pinion gear 19 which is a driving means is being fixed to the both ends of the driving shaft 17. A right inversion with the drive motor which was formed in the casing 15 and which is not illustrated is possible for the driving shaft 17. A power supply is supplied with the door harness in which the drive motor was drawn in the casing 15 and which is not illustrated.

[0008]The right inversion of a drive motor is controlled by the slide switch 13 formed in the above-mentioned operating plate part 11. This slide switch 13 is a switch for moving the SW module 9 by a manual, and especially a slide type switch is used for it in order to attach the exterior and operational distinction with other switches. The opening 21 which can insert the casing 15 is formed in the upper surface 7 of the arm rest part 5. The size of a cross direction is larger than the size of the cross direction of the casing 15, and the opening 21 is formed so that the slide to a vehicles cross direction of the casing 15 may be attained. The above-mentioned operating plate part 11 can always cover the opening 21, when it is formed more greatly enough than the opening 21 and the casing 15 is moved to the front end or the back end of the opening 21.

[0009]The notch 23 (refer to drawing 4) which can insert the pinion gear 19 is formed in the opening 21. Therefore, the SW module 9 coincides the pinion gear 19 with the notch 23, and it is inserting the casing 15 in the opening 21, and after only the operating plate part 11 has been exposed to the upper surface 7, it will be accommodated in the arm rest part 5. The claw part 25 protrudes on the both side surfaces of the casing 15, and when the casing 15 is inserted in the opening 21, after the claw part 25 carries out elastic displacement and overcomes the opening 21, it stops at the rear-face edge of the opening 21 (refer to the state of drawing 2). Therefore, after the casing 15 has pinched the edge of the opening 21 by the operating plate part 11 and the claw part 25, the omission from the opening 21 is prevented. In this fitting state, pulling out is regulated and the slide of the casing 15 is attained at the cross direction of the opening 21.

[0010]The base plate 27 is formed in the back side of the door trim 3, and just under the opening 21, the base plate 27 counters and is arranged. The base plate 27 is fixed to the door structure member which is not illustrated. The base plate 27 has the rack clamp face 29 parallel to the undersurface of the casing 15. The rack 31 which is a parallel driving means of a couple is formed in this rack clamp face 29, and each pinion gear 19 projected from the above-mentioned casing 15 gears on the rack 31. Therefore, when the drive motor in the casing 15 drives and the pinion gear 19 rotates, the pinion gear 19 will roll the rack 31 top by a meshing state, and the opening 21 will

be moved to the casing 15 by this at a cross direction.

[0011]The standing wall 33 (refer to drawing 2) prolonged in the move direction of the casing 15 is formed in the rack clamp face 29, and the side (field which intersects perpendicularly with the rotation center axis of the pinion gear 19) of the pinion gear 19 becomes the standing wall 33 with a contact state. Therefore, while the casing 15 pinches opening 21 edge by the operating plate part 11 and the claw part 25 and the backlash of a sliding direction is prevented, a lateral backlash is prevented by the side of the pinion gear 19 being contacted by the standing wall 33.

[0012]The limit switch 35 is attached to the front face and rear face of the casing 15. This limit switch 35 operates, when the casing 15 is moved to the front end and the back end of the opening 21, and it stops rotation of a drive motor. For example, after the limit switch 35 of anterior part has operated, a drive motor is not driven even if the slide switch 13 for moving forward is operated further. Also in this state, the operation for movement to the back of the slide switch 13 becomes possible.

[0013]In the SW module 9 constituted in this way, even if it is a case where a seat is moved, the operating plate part 11 will be moved to the optimal position to a driver by adjustment of a driving position by carrying out manual operation of the slide switch 13. While the operation switch in a stiff posture is lost by this, it becomes unnecessary to divert a look to the door side greatly for an operation switch.

[0014]The SW module 9 constituted in this way becomes possible [controlling by the cockpit control system developed by the present vehicles in generalization]. In this control system, it becomes controllable [the more substantial cockpit] by having a data communication facility and a memory control function.

[0015]In the control system using a data communication facility, the slide position of the SW module 9 is determined from the data of the fundamental driving position based on ergonomics. That is, to the movement zone of a seat and a steering, the optimal movement zone of the SW module 9 corresponding to this is calculated ergonomically, and the SW module 9 is spotted automatically.

[0016]In the control system using a memory control function. By memorizing the position (position information) of the seat for several persons, a steering, and SW module 9 grade as an electrical signal to memory storage, and inputting a specific recognition signal, The drive quantity of each drive is controlled to read the position information corresponding to this inputted recognition signal, and to become a position corresponding to the read position information. For example, if a specific recognition signal is inputted in the case of the SW module 9, The position information corresponding to the recognition signal is read from memory storage, according to it, the drive quantity of the drive motor in the casing 15 will be controlled, and the operating plate part 11 will be moved to the peculiar position of the driver corresponding to the inputted recognition signal.

[0017]Thus, the SW module 9 is performing control by a data communication facility, While the operating plate part 11 is moved to the optimal position doubled with a bodily shape and posture of the driver calculated ergonomically and operation becomes possible also in operation with the impossible posture which is not, By performing control by a memory control function, it will dress

up for every driver, setting out of a fine peculiar driving position will be attained, and the reproducibility will also be secured.

[0018]Since the operating plate part 11 was formed in the cross direction movable on the upper surface 7 of the arm rest part 5 according to the above-mentioned SW module 9, Even if it is a case where a seat is moved, the distance of the operating plate part 11 and a driver can always be adjusted the optimal by making the operating plate part 11 correspond to it, and moving. As a result, the operativity of the operating plate part 11 can be made good, it is not forced an operation switch with a posture impossible during operation, and a possibility of interfering with operation is lost. Since the adjustment to the optimal position is attained, looking aside while driving for door-switch operation can also be lost, and safety can also be raised.

[0019]By controlling the SW module 9 using the data communication facility included in the cockpit control system, it can be made to be able to respond to seat movement magnitude to arbitrary drivers, and the position of a door switch can be ergonomically determined automatically to the optimal position. A switch position peculiar to each driver who registered by controlling using a memory control function can be set up automatically, and the reproducibility is also securable, while dressing up to each driver and attaining fine adjustment.

[0020]The SW module 9 is formed in the door of a driver's seat, and also it can consist of the same structures also as other seats (a passenger seat, a backseat, etc.). Although the pinion gear 19 and the rack 31 were used as a means for making the casing 15 slide in the above-mentioned embodiment, A means to replace a slide means with the pinion gear 19, and to roll this rubber roller on a rail using a rubber roller, Or they may be a means to which the casing 15 is moved, or means, such as a linear motor, by connecting a wire to the casing 15 and rolling round this wire with a drive motor.

[0021]

[Effect of the Invention]Since the operating plate part of the door switch was provided in the cross direction of vehicles movable according to the sliding type door-switch module concerning this invention as explained to details above, By making an operating plate part correspond to it, and moving, even if it is a case where a seat is moved. While always being able to adjust the distance of an operating plate part and a driver the optimal and being able to make operativity good, it is not forced an operation switch with a posture impossible during operation, and the operativity of a door switch and the safety at the time of operation can be raised. According to the control system of a sliding type door-switch module, it can be made to be able to respond to seat movement magnitude to arbitrary drivers, and the position of a door switch can be ergonomically determined automatically to the optimal position. A switch position peculiar to each driver who registered can be set up automatically, and the reproducibility is also securable, while dressing up to each driver and attaining fine adjustment.

[Translation done.]